

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
29 December 2004 (29.12.2004)

PCT

(10) International Publication Number
WO 2004/114128 A2

(51) International Patent Classification⁷: **G06F 9/318**,
9/38, 1/32

Prof. Holstlaan 6, NL-5656 AA Eindhoven (NL). **SETHU-
RAMAN, Ramanathan** [IN/NL]; c/o Prof. Holstlaan 6,
NL-5656 AA Eindhoven (NL).

(21) International Application Number:
PCT/IB2004/050964

(74) Agent: **DE JONG, Durk, J.**; Prof. Holstlaan 6, NL-5656
AA Eindhoven (NL).

(22) International Filing Date: 22 June 2004 (22.06.2004)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
03101877.3 25 June 2003 (25.06.2003) EP

(81) Designated States (unless otherwise indicated, for every
kind of national protection available): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD,
MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG,
PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM,
TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM,
ZW.

(71) Applicant (for all designated States except US): **KONIN-
KLIJKE PHILIPS ELECTRONICS N.V.** [NL/NL];
Groenewoudseweg 1, NL-5621 BA Eindhoven (NL).

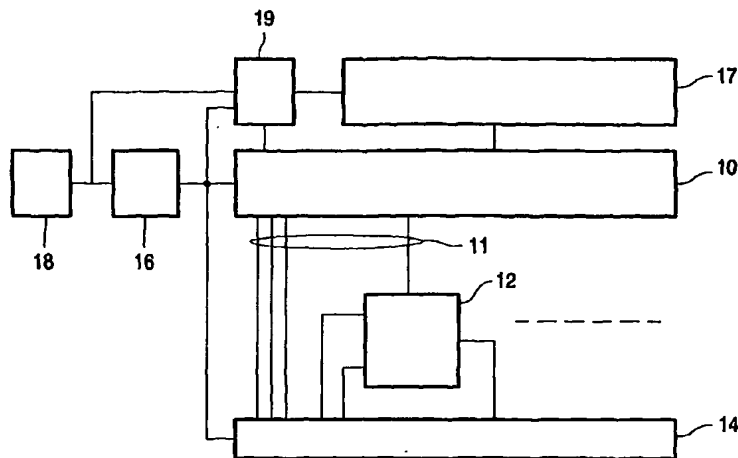
(84) Designated States (unless otherwise indicated, for every
kind of regional protection available): ARIPO (BW, GH,
GM, KE, LS, MW, MZ, NA, SD, SI, SZ, TZ, UG, ZM,
ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI,
FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

(72) Inventors; and

(75) Inventors/Applicants (for US only): **ALBA PINTO**, Car-
los, A. [PE/NL]; c/o Prof. Holstlaan 6, NL-5656 AA Eind-
hoven (NL). **SRINIVASAN, Balakrishnan** [IN/NL]; c/o

[Continued on next page]

(54) Title: INSTRUCTION CONTROLLED DATA PROCESSING DEVICE



(57) Abstract: The data processing device has a plurality of functional units and issues instructions in successive instruction cycles. Instructions of a first type are each intended for one functional unit at a time. An instruction of a second type causes a combination of functional units to respond in the same instruction execution cycle, a result from one functional unit being used by another as part of the execution of the same instruction. Preferably, the device supports alternative operation at a number of different instruction cycle rates, dependent on whether an executed program segment contains instructions of the second type. The fastest instruction cycle rate does not allow execution of the instruction of the second type, because operation by different functional units does not fit within the instruction execution cycle. When possible, the device saves power by switching to a slower clock rate, in which case instructions of the second type are executed to save additional power, by reducing the number of instructions that have to be issued.

WO 2004/114128 A2



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA,

SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

Published:

— without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.